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RSPA-02-13658-18

Dockets Management System
U.S. Department of Transportation
Room PL-401
400 Seventh Street, S.W.
Washington, DC 20590-0001

Re: Docket No. RSPA-2002-13658 (HM-215E); Comments on notice of proposed rulemaking

Dear Sir or Madam:

These comments are offered in response to the notice of proposed rulemaking (NPRM) entitled **Harmonization with the United Nations Recommendations, International Maritime Dangerous Goods Code, and International Civil Aviation Organization's Technical Instructions**, which was published in the *Federal Register* on December 3, 2002 [67 FR 72034], under Docket No. RSPA-2002-13658 (HM-215E). We appreciate the opportunity to comment on the proposed amendments to the Hazardous Materials Regulations (HMR) in the above-referenced NPRM, and note that these comments relate specifically to those proposals that impact the transport of advanced technology "large" lithium cells and batteries, such as may be used in electric vehicle (EV) and hybrid electric vehicle (HEV) applications.

The FreedomCAR and Vehicle Technology Office of the U.S. Department of Energy (DOE), through the Shipping Sub-Working Group (SSWG) of its Advanced Battery Readiness Working Group, had for several years been working with RSPA to promote the development, at both the international and domestic levels, of regulations permitting the transport of large, advanced technology lithium batteries that have applications in electric vehicle (EV) and/or hybrid electric vehicle (HEV) propulsion. These efforts at the international level led to decisions by the United Nations (UN) Committee of Experts on the Transport of Dangerous Goods in December 2000 to further amend the provisions of its *Recommendations on the Transport of Dangerous Goods* ("the UN Recommendations") relating to the transport of lithium batteries. In addition, the International Civil Aviation Organization (ICAO) has recently implemented amendments to its *Technical Instructions for the Safe Transport of Dangerous Goods by Air* to facilitate the transport by cargo-only aircraft of large lithium batteries.

In this connection, we welcome and fully support the effort by RSPA in subject NPRM to align the lithium battery transport provisions of the HMR with the corresponding provisions in the UN Recommendations and the ICAO Technical Instructions, and to improve safety in the transport of lithium batteries.

The subject NPRM has been carefully and thoroughly analyzed with a view to ensuring full harmonization with the latest lithium battery transport provisions in the UN Recommendations and the ICAO Technical Instructions, and that it adequately addresses certain practical problems encountered under the current provisions of the HMR in connection with the transport of large lithium batteries (including when installed in EVs and HEVs). In general, we strongly support the amendments proposed in the NPRM in relation to the provisions for the transport of large lithium batteries, and EVs and HEVs powered by lithium batteries. Nevertheless, based on our review we have identified several areas where full harmonization has not been achieved, where inconsistencies remain, or where the regulations could be improved. Comments on these issues are offered below. For each comment offered, the relevant regulatory provision in the NPRM is identified, an explanation is provided of the issue of concern, and specific action suggested to address that concern.

Section 172.102, Special Provision 134. The NPRM proposes no amendment to the current text of Special Provision 134, which is applicable to the entry "Battery-powered vehicle", UN 3171 (see existing Hazardous Materials Table entry and text of Special Provision 134) - the entry under which vehicles powered *only* by batteries (i.e., "EVs") are transported. As worded, the special provision defines the applicability of the "Battery-powered vehicle" entry to include vehicles powered *only* by "wet batteries or sodium batteries". On the other hand, proposed new Special Provision 157, applicable to the entry "Vehicles, flammable liquid powered" (UN 3166) under which hybrid electric vehicles (HEVs) would be transported, would clearly state that the entry includes vehicles powered in part by "wet, sodium or lithium" (emphasis added) batteries. To ensure consistency with existing UN Special Provision 240 applicable to UN 3171 and with proposed new Special Provision 157 applicable to UN 3166, we believe Special Provision 134 should be amended to include also a reference to lithium batteries, so that it is clear that vehicles powered *only* by lithium batteries are covered by UN 3171.

For these reasons, it is suggested that Special Provision 134 be aligned with the corresponding UN Special Provision 240 by adding a reference to lithium batteries and revised to read:

"134 This entry applies only to vehicles, machinery and equipment which are powered by wet, sodium or lithium batteries and which are transported with these batteries installed. Examples of such items are electrically-powered cars, lawn mowers, wheelchairs and other mobility aids. Self-propelled vehicles which also contain an internal combustion engine must be consigned under the entry "Vehicle, flammable liquid powered" or "Vehicle, flammable gas powered", as appropriate."

Section 173.185. The NPRM proposes no change to the text of paragraph 173.185(j), which permits cells and batteries that have not been subjected to the UN tests to be transported by motor vehicle as items of Class 9 "for testing purposes". However, in light of prior RSPA interpretation regarding the intent of this paragraph, and to improve harmonization with UN Special Provision 310, it is suggested that the wording of this paragraph be modified slightly.

RSPA has interpreted the phrase "for testing purposes" to include not only performance of the lithium battery tests prescribed in the UN Test Manual, but also field evaluation testing of prototype lithium battery designs (see enclosed letter dated February 5, 1998). In the case of transport of samples of self-reactive substances and organic peroxides, RSPA has similarly determined that transport without having undertaking the full regime of classification testing is permitted for "testing or product evaluation" - and has so explicitly stated in the HMR (see §§ 173.224(b)(3) and 173.225(c)(2), respectively). We believe it would be helpful to battery developers if the intent with regard to lithium battery transport for "testing" were also to be explicitly stated in § 173.185(j) as including testing for product evaluation.

Also, and in addition to transport for "testing", we note that UN Special Provision 310 contains an exception for "production runs consisting of not more than 100 lithium cells and batteries". Although the applicability of UN Special Provision 310 is not limited to transport only by motor vehicle as is the case with § 173.185(j) of the HMR, it would nevertheless be valuable to manufacturers producing small production runs of unique lithium battery designs (for which full UN testing is not practicable), if 173.185(j) could be aligned with UN Special Provision 310 to the extent that it also provides relief for "small production runs" of lithium cells and batteries.

For these reasons, it is suggested that § 173.185(j) be revised to read:

"(j) For testing or product evaluation purposes, or when manufactured in production runs consisting of not more than 100 cells or batteries, and when not contained in equipment, cells and batteries may be offered for transportation and transported by highway as items of Class 9. Packaging must conform with paragraph (e)(5) of this section."

Section 173.220. Section 173.220 is the "packaging" section referenced in Column (8) of the Hazardous Materials Table entries for both "Battery-powered vehicle" (UN 3171) and "Vehicle, flammable liquid-powered" (UN 3166). The NPRM proposes no amendments to Section 173.220 in relation to its provisions for batteries that may be installed in these vehicles. However, nowhere in that section is it clearly stated that vehicles may have lithium batteries installed, this notwithstanding the specific reference to lithium batteries in the proposed new Special Provision 157. Rather, reference is made only to "wet" batteries (see §§ 173.220(a)(2) and (c)). This is inconsistent with the new Special Provision 157 as well as with Special Provision 134 (both as it is currently worded and as proposed herein to be revised), each of which specifically addresses other types of batteries, and these inconsistencies could lead to confusion in interpretation and application of the provisions of § 173.220. Therefore, it is suggested that the text in Section 173.220 be appropriately aligned with that in the proposed new Special Provision 157 to clearly convey that, in addition to "wet" batteries, the section applies equally to vehicles containing installed sodium or lithium batteries. To accomplish this, the following amendments are proposed to § 173.220:

1) Revise paragraph (a) (2) to read:

"(2) It is equipped with a wet electric storage battery other than a non-spillable battery, or with sodium or lithium batteries; or"

2) Revise the heading and first sentence in paragraph (c) to read:

"(c) *Battery powered or installed.* Batteries must be securely installed, and wet batteries fastened in an upright position.
* * *"

In closing, we welcome the opportunity to comment on the proposed amendments to the HMR in relation to the transport of advanced technology lithium cells and batteries, and we appreciate and support RSPA's efforts in connection with the development of suitable regulations for this purpose at both the domestic and international levels. Please do not hesitate to contact me if you have questions, or need additional information, concerning these comments.

Sincerely,

Gary Henriksen

Gary L. Henriksen, Chairman
DOE's Shipping Sub-Working Group
& Manager, Battery Technology Dept.,
Argonne National Laboratory

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Enclosure

cc: Mr. E. A. Altemos, HMT Associates
Mr. Robert A. Richard (DHM-5)
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